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(54) COSMETIC COMPOSITION CONTAINING LARGE QUANTITY OF SALT

Summary of the Invention

The present invention relates to a cosmetic composition stably containing bay salt, Dead Sea salt or bamboo salt, which is used in folk remedies of Korean origin, in an amount of 15% by weight or more, which enhances massages and skin clearing by promoting skin moisturizing-blood flow effect, disinfection effect, and scrub effect.

The cosmetic composition of the present invention contains 15~85 wt.% of salt, 5~50 wt.% of oil, 1~10 wt.% of surfactant and 9~40 wt.% of polyol.

Detailed description of the invention

The present invention relates to a cosmetic composition that contains a large quantity of salt. More specifically, the present invention relates to a cosmetic composition stably containing bay salt, Dead Sea salt or bamboo salt, which is used in folk remedies of Korean origin, in an amount of 15 % by weight or more, which enhances massage and skin clearing by promoting skin moisturizing-blood flow effect, disinfection effect, and scrub effect.

Salt has been widely used for lowering the freezing point of water-in-oil emulsion type cosmetic compositions to improve their storage stability when they are stored at low temperature. Recently, it has been reported that salt is also useful for moisturizing skin, scrubbing contaminated or overly keratinized epidermis and disinfecting skin, while studies for applying salt to cosmetic manufacturing are actively conducted. In Norda Briefs No. 462, Nov. Dec., 1074, it is reported that salt is superior to urea, which has been in the spotlight as a natural moisturizing agent, in terms of moisturizing effect and skin stability and proposes a common salt-containing skin cream for moisturizing dry skin.

Recently, some patent applications disclosed examples of cosmetic compositions that contain bamboo salt, which is widely known as one of the folk remedies of Korean origin, and some of these compositions were commercialized. Examples of such patent applications that use bamboo salt include Korean patent application Nos. 92-12630, 93-16729, 93-23960 and 93-24090. However, prior patent inventions or techniques have had some difficulties in using salt more than 15 wt.% because of poor storage stability of products, and therefore, they have had some limitations in salt content.

The inventors of the present application studied the water-free emulsification technique to produce a formulation that has excellent storage stability while containing a large quantity of salt and completed the present invention. The water-free

emulsification technique deals with oil-in-polyol type emulsion that uses oil and polyol as a polar solvent and was reported in *Journal of Pharmaceutical Science* vol. 53, No. 6 (June, 1964) P 651-655. Oil-in-water or Water-in-oil emulsion that utilizes water generally has a drawback that salt cannot be used in large quantity because the dissociation of salt significantly reduces the solubility of a surfactant. On the other hand, oil-in-polyol emulsion has an advantage of long time stable maintenance of salt in its solid form without dissociation, because the emulsion does not contain water at all.

Therefore, the present invention is characterized in that a cosmetic composition stably containing large quantity of salt is provided, which enhances massages and clear skin by moisturizing skin, promoting blood flow and disinfecting.

A detailed description of the present invention is provided as follows.

The cosmetic composition of the present invention is characterized by consisting of 15~85 wt.% of salt, 5~50 wt.% of oil, 1~10 wt.% of surfactant and 9~40 wt.% of polyol.

In the present invention, at least one salt selected from bay salt, Dead Sea salt and bamboo salt is used. In order to produce various scrub effects, the particle size of salt is preferably in the range of 0.01mm ~ 5.0mm. If the composition contains salt less than 15 wt.%, it is inferior in its scrub effect. If the salt content exceeds 85 wt.%, the composition becomes unpleasant to the touch and irritates the skin when applied to the skin, which is not preferable.

Oil used in the present invention is mineral oil, cyclomethicone, isostearyl isostearate, cetyl octanoate, octyldodecyl myristate, trioctanoin, or the like. As a surfactant, non-ionic surfactant or anionic surfactant is used. In the presenting invention, at least one polyol selected from glycerol, 1,3-butylene glycol, propylene glycol and dichlorophylene glycol are used.

The cosmetic composition of the present invention may be applied to any cosmetics for body massage, body cleansing, facial massage and facial cleansing.

The following examples are provided to further illustrate the present invention.

Examples 1 ~ 2 & Comparative examples 1 ~ 2

Table 1

(unit: wt.%)

	Material	Example 1	Example 2	Comparative Example 1	Comparative Example 2
Oil Phase	Cetostearyl alcohol	–	--	3.5	3.5
	Glyceryl monostearate	--	--	2.0	2.0
	beeswax	--	--	2.0	2.0
	Vaseline	--	--	2.0	2.0
	Liquid paraffin	20.0	15.0	15.0	15.0
	cetyl octanoate	10.0	5.0	5.0	5.0
	octyldodecyl myristate	10.0	5.0	5.0	5.0
Surfactant Phase	Polysorbate	--	--	1.5	1.5
	sorbitan stearate	--	--	0.5	0.5
	PEG60 hydrogenated – Castor oil	10.0	5.0	--	--
Polyol Phase	Conc. Glycerol	15.0	10.0	10.0	10.0
	1,3-butylene glycol	10.0	5.0	5.0	5.0
	propylene glycol	10.0	5.0	5.0	5.0
Salt Phase	Bamboo salt	15	50	--	15
Aqueous Phase	Preservatives	--	--	suitable amt.	suitable amt.
	Refined water	--	--	To 100	To 100

As shown in Table 1 above, examples 1 and 2 were prepared by combining oil-in-

polyol base, which is a water-free emulsion, with bamboo salt while comparative examples 1 and 2 were prepared with conventional oil-in-water cosmetic bases. To produce products of examples, the surfactant phase was added to the polyol phase and was homogeneously dissolved by heating at 60~75°C. To the mixture, the oil phase with room temperature was slowly added while the mixture was stirred in a homomixer at 4,000~6,000 rpm for 5 to 10 minutes. After cooling, salt was added by spraying salt using peddle mixer at 10~30 rpm to produce the products.

Products of comparative examples were prepared according to a conventional method for preparing an oil-in-water emulsion.

To test the effect of skin moisturizing, blood flow-promoting effect, disinfecting effect, clearing effect and storage stability of the cosmetic compositions of examples and comparative examples above, moisture capacities, skin blood flow rates, microbicidal activities and cleaning efficiencies were measured and stability variation with a lapse of time was tested.

Measurement of moisture capacities

Moisture capacities of the products of examples 1 and 2 and comparative examples 1 and 2 were measured to examine the skin moisturizing effect of each of the products. Moisture capacities of the products were measured in a room where temperature and relative humidity were constantly maintained at 25°C, 60%, respectively, with 20 male and female adult subjects. After giving subjects a rest for 30 minutes in the room with constant temperature and humidity, the products were applied to 4cm x 4cm area on the skin of the inner part of the forearm. Moisture capacities before the application and at several time points after the application were measured using Skin Moisture Measuring Device (Skicon 200, IBS). Results are shown in Table 2. Comparative example 2 was excluded in this test because it also contains salt like the examples. As shown in table 2, the products of example 1 and 2 that contain salt show excellent moisture capacity compared with comparative example 1 that does not contain salt.

Table 2

Results of measuring skin moisture capacities

Products	Measures before application (mean)	Measures after application (mean)			
		30 min.	1 hr.	2 hrs.	3 hrs.
Example 1	2.4	26.9	25.7	23.4	14.2
Example 2	2.5	27.6	26.2	24.7	15.2
Comparative Example 1	2.6	10.1	9.4	9.1	4.9

Measurement of skin blood flow rates

Skin blood flow rates of the products of examples 1 and 2 and comparative example 1 were measured to examine the skin blood flow promoting effect of each of the products. Skin blood flow rates of 20 male and female adult subjects were measured before and after applying the products to a circular area with a diameter of 3cm on the subjects' forearm using a skin blood flow rate-measuring device (Perifoux, Perimed). Results are shown in Table 3. Comparative example 2 was excluded in this test because it also contains salt like the examples. As shown in table 3, the products of example 1 and 2 that contain salt show excellent blood flow-promoting effects compared with comparative example 1.

Table 3

Results of measuring skin blood flow rates

Products	Mean values before Application (B)(mV)	Mean values 30min. after Application (A)(mV)	Rate of blood flow rate Increase (%)*
Example 1	30	36	20
Example 2	30	39	30
Comparative Example 1	30	32	7

* Rate of blood flow rate increase (%) = (A-B)/B x 100

Measurement of disinfecting effect

To examine the disinfecting effect of each of the products of examples 1 and 2 and comparative example 1, a measurement test was performed. In the test, *E.coli* and *P. acnes* were used as target microorganisms. Minimum Inhibitory Concentration (hereinafter referred to as 'MIC')s were measured as an index of microbicidal activities of the products. Brain Heart Infusion medium was used for *E.coli* and Actinomyces Broth medium for *P.acnes*, respectively. Cells were inoculated in media with concentration of 1 x 10^6 cells/ml followed by adding each of the products with the same concentrations. After 48 hours of incubation in 37°C bath, MICs were measured at which microbial growth was not detected. Results are shown in Table 4. Comparative example 2 was excluded in this test because it also contains salt like the examples. As shown in table 4, the products of example 1 and 2 that contain salt have much better microbicidal activities compared with comparative example 1. Therefore, a cosmetic composition containing salt is expected to prevent and treat acne as well as alleviate skin trouble.

Table 4

Results of measuring disinfecting effect

(wt.%)

Microorganism	Minimum Inhibitory Concentration (MIC)		
	Example 1	Example 2	Comparative example 1
E. coli	5	4	18
P. acnes	15	6	20

Measurement of clearing efficiencies

(1) To a fixed area (4 x 4cm^2) of skin, a fixed amount (0.2g) of foundation was applied using a replica made from silicon resin. After that, (without a step of applying any product of examples or comparative examples) the foundation was removed cleanly using C12~15 alcohol benzoate. The substance removed from the

skin was diluted with alcohol benzoate and homogeneously dispersed using a sonicator. Absorbences in the wave length range of 200 nm ~ 800 nm were measured using a UV-visible light spectrophotometer to determine an absorbence at a wavelength where the maximum absorbence was observed. This measurement was repeated five times and the mean value corresponds to A of the equation below.

(2) Foundation was applied to the skin using a replica made from silicon resin as described in above step (1). After that, a fixed amount (0.2g) of each of the products (examples 1 and 2 and comparative example 1) to be examined was applied to the skin area and an applicator was moved back and forth 40 times on it only with the applicator's own weight. After removing the foundation by pressing the area with tissue using a fixed pressure four times, the remaining foundation was cleanly removed using C12 ~ 15 alcohol benzoate, and the absorbences were measured as described in above step (1). This measurement was repeated five times and the mean value corresponds to B of the equation below. Clearing efficiencies were determined using the equation below and results are shown in Table 5.

Clearing activity (%) = (A-B)/B x 100

Table 5

Results of measuring clearing efficiencies

Sample	Example 1	Example 2	Comparative example 1
Clearing efficiency	95	99	70

As shown in Table 5 above, the products of example 1 and 2 show excellent clearing efficiencies compared with the comparative.

Measurement of stability with a lapse of time

To examine stability of each product of examples 1 and 2 and comparative example 1 with a lapse of time, thermostabilities were measured after each product was put in a

transparent container right after preparation and stored at room temperature (25°C), high temperature (45°C) or low temperature (0°C). To examine photostability of each product with a lapse of time, UV was irradiated using an artificial irradiator (Sun Test CPS) to 20 ml of each product contained in a transparent container. Results are shown in Table 6. Comparative example 1 was excluded in this test because it does not contain salt, and thus, has excellent storage stability. As shown in table 6, the products of examples of the present invention have much better storage stability compared with comparative example 2, even though all have the same salt content.

Table 6

Results of measuring stability with a lapse of time*

Storage condition		Stability		
		Example 1	Example 2	Comparative Example 2
Room temp.	After 1 yr.	◎	◎	x
	After 2 yrs.	◎	◎	xx
45 °C	After 3 mos.	◎	◎	xx
	After 6 mos.	◎	Δ	xx
0 °C	After 3 mos.	◎	◎	x
	After 6 mos.	◎	◎	x
Artificial irradiation	3 hrs.	◎	◎	x
	5 hrs.	◎	◎	xx

* symbols: ◎ – very stable Δ - a little unstable
x – partially separated xx – completely separated

As described above, since the cosmetic composition of the present invention stably contains a large quantity of salt compared with conventional water-in-oil or oil-in-water emulsion, it exceptionally takes on various effects of salt such as moisturizing effect, blood flow-promoting effect, disinfecting effect and scrubbing and skin clearing effect.

Claims

We claim:

1. A oil-in-polyol type cosmetic composition comprising 15-85 wt.% of salt, 5-50 wt.% of oil, 1-10 wt.% of surfactant, and 9-40 wt.% of polyol, wherein the composition does not contain water.

2. The cosmetic composition according to claim 1, wherein the salt is at least one salt selected from bay salt, the Dead Sea salt and bamboo salt.

3. The cosmetic composition according to claim 1, wherein the particle size of the salt is in the range of 0.01mm to 5.0mm.

4. The cosmetic composition according to claim 1, wherein the cosmetic composition is for body massage, body cleansing, facial massage and facial cleansing.